Formation for professionals in telehealth units - beyond professional training

**Abstract**

Introduction: Telehealth is important to add and qualify the local healthcare systems. There are more than two thousand telehealth centres in Brazil, covering the primary care services, in special, the Family Health Care Program. They provide support to physicians and their teams in remote areas. Methods: Training and continuing education strategies for professionals qualified to handle telehealth technologies, which, in addition to the technical knowledge related to the equipment, act in the perspective of the universalization, equity and integrality of health care according to their context. Results: We present the experience in consolidating a telehealth training model, considering the technical and political-administrative dimension of the health system, broadening the field of action and reflection on ways of thinking and practice in telehealth. Discussion: It prioritizes the internalization dimension of the technician in the model of interprofessional collaboration, by compromising technical knowledge and ethical conduct.

**Keywords:** Education Continuing; Computer Literacy; Video-Audio Media; Telemedicine.

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**Resumen**

Introducción: La telesalud es fundamental para ampliar y calificar la atención a la salud. Se estima que hay dos mil puntos de tele salud en el territorio brasileño, cubriendo la atención básica, específicamente el Programa de Salud de la Familia, prestando apoyo a médicos y sus equipos en zonas aisladas. Métodos: Estrategias de educación permanente de profesionales habilitados para manejar las tecnologías, que actúen en la perspectiva de la universalidad, equidad e integralidad de la atención de acuerdo con este contexto. Resultados: Se presenta la experiencia en la consolidación de un modelo de formación en telesalud, contemplando la dimensión técnica y política-administrativa del sistema de salud con vistas a ampliar el campo de acción sobre los modos de formar la telesalud. Discusión: Se prioriza la dimensión de internalización del profesional en el modelo de colaboración interprofesional, contemplantando el saber técnico y la conducta ética.

**Palabras-clave:** Educación Continua; Conocimientos en Informática; Medios Audiovisuales; Telemedicina; Tecnología de la Información.
Formation for professionals in telehealth units - beyond professional training

Introduction

Telehealth as a type of health service, with the use of information and communication technologies in care, has increased exponentially in Brazil in the last few years. After a decade, the 900 telehealth places in nine federative units, goal of the Health Ministry pilot project in 2007, have overcome 1,500 places all around the territory.

The term telehealth has many meanings in the literature - including being used as a synonym to telemedicine, digital health and medical informatics in some interventions. We applied the wide concept from the World Health Organization that describes telehealth as the use of information and communication technologies for healthcare. Although telehealth didn’t configure itself as a policy, teleconsultancies, telediagnosis, various activities in tele-education and a fluorescence database of formational second opinion, fomented by this public network of telehealth centers are part of the daily basis of SUS workers.

Telehealth centers in the second and third care levels will be present in the hospitals of the main brazilian public universities in such context. Connected to these centers there are more than 2 thousand telehealth places scattered throughout the country, covering Primary Care, especially, the Family Health Program, providing technical and pedagogical support to doctors and their teams in the most diverse corners.

In this eminent scenery a new profile of workers in the health field appears, called operator or technicians in telehealth. Usually, this professional is relocated from another administrative position and needs to acquire specific skills such as: operate videoconference’s devices, maintain various computing equipments, acquire minimal knowledge in tele-education and online transmission, in addition to handle complex agendas with various demands.

However, this variety of workers doesn’t have at their disposal a specific training oriented to such activities. The training proposal for professionals of telehealth units aims to fill this gap, in a way that this technician can perform all the operations of a telehealth system in the places, technological telehealth centers and other establishments from the Single Health System (SUS) and from the supplementary health.

In the decade of 2007-17, it was observed in these experiences that the connections between specialists and doctors from family and community health in telehealth centers, that are generally located in basic health units, have composed an audiovisual memory that feeds repositories for continuing education of the professional in service.

This material shapes the collection of open educational resources from the Universidade Aberta do Sistema Único de Saúde - the UNA-SUS (free translation: Open University of the Unique Health System), whose pilot project was implemented (2008) at the time as part of the permanent education policy oriented towards the strengthening of Primary Care.

In order for these audiovisual records to have reproduction quality in many devices (from smartphones to giant screen) and follow the patterns of biosafety in the medical and diagnostic digital images transmitted in real time, it became necessary for this support professional to specialize in a specific knowledge, that will impact in the improvement of the provided to the population and in the assistance workflow as well as will aid him in the critical comprehension of his role and importance in this scenery.

In this way, the experience in the structuring and consolidation of a telehealth training model is presented, contemplating the technical and political-administrative dimensions of the health system aiming to increase the action field and the reflection about the ways of thinking/doing telehealth.

Methods

The course in its first edition will be destined to telehealth professionals who are already serving in the hospital centers. This initial offer in 2018 covers the city of Rio de Janeiro, prioritizing the Federal University of Rio de Janeiro, Foundation Oswaldo Cruz and federal hospitals with teaching activities.

As main goal, the course addresses the basic principles of audiovisual training, telecommunication network’s infrastructure, operation of videoconference and telepresence devices to act with autonomy in the sceneries with telehealth, as well as reflect about its role on SUS and in the healthcare network’s organization in the brazilian territory.

The proposal was elaborated according to assessment studies, official documents from the Federal Government from the period of 2008 to 2013 related to the theme tele-
health and telemedicine. The thesis and the consulted literature pointed to the emergence of this professional profile in SUS and its potentialities.

As of this necessity, the Telehealth Laboratory National Institute of Women’s, Child’s and Adolescent’s Health Fernandes Figueira (IFF-Fiocruz) identified interlocutors in Rio de Janeiro’s attention network and in the second semester of 2012, along with the teaching department, outlined the first pedagogical proposition with three main axes: collective health, audiovisual and notions of information technology with emphasis on networks.

Between 2013 and 2015, along with the area of health policies and planning, the elective course “Communication and Information Technology for Health Planning” was created, for students of the graduation course of the Institute of Studies in Collective Health from the Federal University of Rio de Janeiro (IESC-UFRJ). In 2016, meetings were held where the lines of work for an agreement of technical cooperation between the IFF-Fiocruz and the IESC-UFRJ to establish a new pedagogical proposal for administrators and technicians from the public telehealth centers in Brazil.

Other important contribution throughout the process was the insertion of the Telehealth and Telemedicine Center of the Coordination of Policies of the Worker’s Health from UFRJ’s Personnel Pro-Rector. It is a hybrid center (acting in worker’s health in the university’s management level), that works as the interface facilitator among the telemedicine/telehealth centers and the university’s central administration. This way of insertion and the center’s coordination being held by technicians and not by teachers, contributed with the technican’s point of view and his daily challenges in the career, in addition to being a link with the other 8 telehealth centers in the university’s hospitals.

The focal object of this cooperation, involving students and professors from the graduation course and the Multi-professional Residency in Collective Health and Fiocruz’s research group called “Telehealth and Health Systems”, is the articulation with the serving telehealth activities, as well as the acquisition of specific skills in information and communication technologies (TIC) in health, that became a fundamental part of the students’ formation in the area of collective health.

In this way, the discipline “Communication and Information Technology for Health Planning”, with a workload of 60 hours and strong focus on the telehealth services started to integrate the group of optional courses from the graduation course in Collective Health, being taught for the first time in the second semester of 2016. In turn, the course for serving technicians, object of this analysis, was presented in 2017 and approved in an internal notice of extension courses promoted by the Ministry of Education for execution in the subsequent year.

Results

It was established as the course’s main goal to enable professionals in order for them to know how to conduct all telehealth system’s operations in the telescientific centers and other SUS and supplementary health establishments. Nonetheless the telehealth manual related the administrative assistant’s functions, the general coordinator’s functions and the computer support functions, and it is important to update this team’s knowledge in order to manage the telehealth centers with quality.

This document and other health initiatives oriented towards this support and system management team aims to fulfill: the technical audiovisual and political-administrative knowledge from the health system, that necessarily the centers’ operator must acquire in order to carry out their role appropriately.

The course’s methodology predicts exhibiting and practicing moment, contemplating a mix of approaches: theoretical, conceptual and practical, with the orientation of service training in different telehealth centers in the city of Rio de Janeiro and afterwards in other associated centers. The theoretical content will be offered in the IESC-UFRJ, in the computer lab. Regarding the theoretical-practical audiovisual module, the student will be able to count on the facilities of the cinematographic technicians’ union and Fiocruz’s.

As training ground, there will be available the telehealth center INI/Fiocruz, IFF-FRIOCRUZ’s Telehealth Lab, Rute Center from the Servers Federal Hospital (HFSE-RJ), the Rute Center of the University Hospital Gaffree and Guinle (HUGG) and UFRJ’s telemedicine and telehealth centers for the students’ service training. In addition to the text reading, computers, videoconference devices, high definition videos capturing cameras, professional illumination and sound system equipment, audiovisual recording studio.

The course will be on-site with the participation of 15 students and managed according to the themes: health; audiovisual; videoconference and networks. The modules must be course in a current way and the total workload is of 120 hours.

The theoretical-conceptual module contains a learning unit called “SUS and the telehealth activities”. Its objective is to present planning and health policies notions, reflect about the Unique Health System and the professional’s supporting role to the telehealth services in Brazil, as well as the labour market opportunities in public health and supplementary to this kind of qualification.

The theoretical-practical module already counts with two learning units. The first unit is entitled “Audiovisual Technique”. Its objective is to get to know the audiovisual tools and techniques in order to develop skills and abilities to be used in the telehealth services from SUS and from supplementary health. As for the second learning unit, it is titled “Videoconference and Networks” and its proposition is to know the computer science’s and telecommunication’s eco-
system so that the student can develop skills to be used in services (Chart I).

**Chart I - Summary of the programmatic content of the course for telehealth technicians**

<table>
<thead>
<tr>
<th>Theoretical-Conceptual Module</th>
<th>Theoretical-Practical Module</th>
<th>Theoretical-Practical Module</th>
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<tbody>
<tr>
<td>Health</td>
<td>Audiovisual Technique</td>
<td>Videoconferences and Networks</td>
</tr>
<tr>
<td>The Unique Health System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notions of script</td>
<td>Videoconference history</td>
<td></td>
</tr>
</tbody>
</table>
| Video edition and completion  | Audio, video, data and communi-
| Audio edition and completion   | cation patterns. Components of the videoconference system |
| Audiovisual production        | Kinds of connections and compar-
| Assembly of cables and audio equipments | ison Protocol H. 323 versus Session Initiation Protocol (SIP) |
| Archiving and integration of documents with videoconference | Multimedia transmission require-
| Plans and atmospheric lighting | ments                                    |
|                               | Quality of service in videoconference |                              |
|                               | Videoconference behind the firewall and about network Address Translation (NAT) |                              |
|                               | Pattern Telecommunication Standardization Sector |                              |
|                               | (ITU-T) from the recommendation E.164 Numbering and Dial Plan |                              |
|                               | Gatekeeper installations and configuration (GnuGK) and Proxy (OpenSER) |                              |
|                               | Service provider, webconference solutions, etiquette tips and good practices for modulators |                              |
| History of Health in Brazil   |                               |                              |
| Telehealth and Telemedicine   |                               |                              |
| Information and Communication Technologies |                               |                              |
| Bioethics and Telehealth      |                               |                              |
| Health promotion as a new healthcare paradigm |                               |                              |
| Health and hospital management planning |                               |                              |

Three egressed assistants from the optional graduation course in Collective Health will be responsible for accompanying the learning units and interviewing the students based in a semistructured script with open and closed questions. The script was elaborated along with the educational staff and with research of multidisciplinary nature. The tool has as objective to compare the experiences of working professionals to the content presented throughout the course.

**Discussion**

When presenting the nuclear intention of a pedagogical proposal in telehealth it is important to explicit the premise that any teaching and learning process oriented towards the application of information and communication technology in the health services is linked to the strengthening of the paradigm of health promotion of the holistic view of the health-sickness process and of the intention to better the populations quality of life, as settled in Alma Ata in the seventies, present in the ideology of the brazilian sanitary movement in the eighties, and in the Unique Health System’s ideology starting with the promulgation of the brazilian constitution in 198811,12.

The interaction between the interlocutors to develop this activity for SUS and the contextualization in the moment in what concerns politics, working processes and perspectives in the health field it is vital to comprehend this format of pedagogical intervention to the formation of the telehealth technician.
Beyond the professional training, it was chosen to investigate through the course with questions are in stake in the context of telehealth practices and to observe the human resources present in the market, in a formative evaluation proposal widely used in the health field\textsuperscript{13,14,15} with the monitoring oriented by researchers and graduation students in the field of collective health.

Interclocutors with interface with the private market were contacted during this period and ended up not adhering to the proposal, claiming two reasons: it is unnecessary to add the theoretical module about health to technicians in a training; small number of students that can be trained in telehealth on-site, compared to what can be done in a massive long distance course.

In response to these two arguments, in addition to the newness of this initiative in Brazil, it is important to highlight the own Permanent Education in Health National Policy (PNEPS) in effect (2014)\textsuperscript{16}, that emphasizes the concept of permanent education as:

(...) learning in work, where this and teaching are incorporated in the daily routine of organizations and into work. It is proposed that the training processes of health workers take as reference people’s needs, sectoral management needs, and the social control in health, have as objective the transformation of professional practices and of the own work organization and be structured from the problematization of work.

As contextual milestone for the pressing need to execute this course, it is highlighted the implantation of the Mais Médicos Program by the Federal Government in 2013, with the objective to reduce the lack of doctors and the regional inequalities in health\textsuperscript{17}. This activity enhanced to the work health managers the doctor’s difficulties in handling the digital world, already considered by Haddad\textsuperscript{18} and other researchers\textsuperscript{19}.

The group that conceived this pedagogical proposal assumes that education is not a synonym for teaching or training. The process of knowledge appropriation is heald according to the development of effective and real relationships of the subject with the world, determined by the historical and social conditions, from which it is part\textsuperscript{20}. In this context, the health and education networks conform according to the project of power. One of the determining factors to promote the population’s health is education.\textsuperscript{21}

It is a conception of education in the ecology of knowledge, working innovative approaches against cognitive global injustice\textsuperscript{22} where health is the responsibility of the whole multidisciplinary team that provides the health service, where interknowledge is produced, admitting the epistemological pluralism in which the scientific knowledge is partial and there is the need to search for dialogues between science and other locally produced knowledges. This multidisciplinarity materializes in the interprofessional collaboration, that characterizes the innovations that the Centers of Family Health\textsuperscript{23} add to SUS’s Primary Care.

One of the fundamental dimensions of this interprofessional collaboration among the health teams is the internalization of the professional in service\textsuperscript{24}. The proposal of this course is based in a liberating pedagogy that contrasts the banking education, when the student/professional can exert his skills with consciousness about his responsibility\textsuperscript{25,26} in the whole process of population’s assistance.

This way, the technician offers a good experience by videoconference, conscious of its political position as a citizen, not only pressing buttons in an automatic way. More than that, he aids the family health team to engage with the multiple artefacts from the information and communication technologies’ ecosystem\textsuperscript{27}, aware of the importance of his technical knowledge and of his ethical conduct. He is also saving lives and providing that other health professionals exercise the clinical practice with more quality.

**Conclusion**

It is expected that the implementation of this on-site course favours the comprehension and the field analysis of the formation of technical operators in telehealth.

When allowing the discussion of the theoretical-practical benchmarks from the telehealth systems, some elements extracted from the experience can subsidize: the identification of structural and organizational characteristics regarding the development of the capacitation process for the professionals of that field; subsidize the elaboration of mechanisms that favour the training process of technicians that are already serving in the telehealth centers; generate data for the management of the working processes instituted in the interior of the Telehealth Centers, contributing to the elaboration of maps and profiles of these units and providing subsidies for the structuring and organization of work strategies in the context of professional qualification in the Healthcare Networks, inside SUS.

The proposal and implementation of this course has the perspective to contribute for the analysis of how the Centers of Teleheath work and for the fortification of the professional training process for telehealth operators. The course will configure as an important tool in the creating and organization of intervention strategies, especially in the scope of the training and qualification of the telehealth practice.

**References**


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